

Application No. 10/627,491  
Response to Office Action of July 13, 2004

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application.

**Listings of Claims:**

1. (Currently Amended) In an aircraft flight management system having a flight management computer that stores a pre-planned lateral route of flight of the aircraft comprising a plurality of successive waypoints to be overflown, ~~the next proximate waypoint being an active waypoint~~, a method providing a return-to-path maneuver in the event that the aircraft deviates from the pre-planned route, comprising:

~~selecting a new candidate active waypoint~~ if the aircraft is outside a preset boundary of the pre-planned lateral route:

choosing either (i) a first waypoint from the waypoints of the pre-planned lateral route as a new candidate active waypoint if the aircraft is on the TO side of the wayline of the first waypoint or (ii) a second waypoint from the waypoints of the pre-planned lateral route as a new candidate active waypoint, the second waypoint following after the first waypoint, if the aircraft is between the wayline of the first waypoint and the wayline of the second waypoint, and

calculating a return-to-path route to overfly the new candidate active waypoint.

2. (Original) The method as set forth in claim 1 further comprising selectably accepting the calculated return-to-path route.

3-5 (Cancelled)

6. (Currently amended) The method as set forth in claim 1 wherein the new candidate active waypoint is a down-path waypoint that results in a low recapture bank angle.

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7. (Currently amended) The method as set forth in claim 1 wherein ~~the new candidate waypoint is a virtual waypoint~~ further comprising generating a virtual waypoint associated with the new candidate active waypoint.

8. (Currently amended) The method as set forth in claim 7 wherein the virtual waypoint provides an intercept course to a ~~successive~~ the new candidate active waypoint.

9-10 (Cancelled)

11. (Currently amended) The flight management system as set forth in claim ~~10~~ wherein ~~the~~ 20 further comprises a flight management computer has comprising a memory for temporarily storing information and the new candidate active waypoint is temporarily stored in the memory until the new candidate active waypoint is selectably accepted

12. (Currently amended) The flight management system as set forth in claim ~~11~~ 20 wherein, upon ~~accepting~~ selecting the new candidate active waypoint the pre-planned route is modified to include the new candidate active waypoint.

13-15 (Cancelled)

16. (Currently amended) The flight management system as set forth in claim ~~10~~ 20 wherein the new candidate active waypoint is a down-path waypoint that results in a low recapture bank angle.

17. (Currently amended) The flight management system as set forth in claim ~~10~~ 20 wherein the new candidate waypoint is a virtual waypoint; further comprising a virtual waypoint associated with the new candidate active waypoint.

18. (Currently amended) The flight management system as set forth in claim 17 wherein the virtual waypoint provides an intercept course to a ~~successive~~ new candidate active waypoint.

19. (original) The flight management system as set forth in claim 18 wherein the calculated return-to-path route may be selectively accepted.

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20. (New) An aircraft flight management system comprising:

a preplanned lateral route of flight of the aircraft comprising a plurality of flight legs connected by waypoints;

a means for selecting a first waypoint from the waypoints of the preplanned lateral route of flight as a new candidate active waypoint if the aircraft is approaching a first wayline associated with the first waypoint and the aircraft is outside a predetermined distance from the pre-planned lateral route;

a means for selecting a second way point from the waypoints of the preplanned lateral route of flight as the new candidate active waypoint, the second waypoint immediately downpath from the first waypoint, if the aircraft is between the waylines of the first waypoint and the second waypoint and the aircraft is outside a predetermined distance from the pre-planned lateral route; and

a means for calculating a return-to-path route that overlies the new candidate active waypoint.

21. (New) The method of claim 1 further comprising the step of allowing the flight management system to select new waypoints from the waypoints of the preplanned route of flight as the aircraft passes the waypoints if the aircraft is inside the preset boundary of the pre-planned lateral route.

22. (New) The method of claim 1 further comprising the steps of determining if a return path can be built from the aircraft position to a leg associated with the new candidate active waypoint at an interception of forty five degrees while staying within a capture region is possible; and

if the return path is possible, constructing an orientation path.

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23. (New) The method of claim 8 wherein the virtual waypoint provides a tracking point that lies in the path of an aircraft on a forty five degree intercept path of the new candidate active waypoint.

24. (New) The flight management system of claim 20 the flight management system automatically selects new waypoints from the waypoints of the preplanned route of flight as the aircraft passes the waypoints if the aircraft is inside the preset boundary of the pre-planned lateral route.

25. (New) The flight management system of claim 20 further comprising a means for determining if a return path can be built from the aircraft position to a leg associated with the new candidate active waypoint at an interception of forty five degrees while staying within a capture region is possible; and

if the return path is possible, constructing an orientation path.

26. (New) The flight management system of claim 18 wherein the virtual waypoint provides a tracking point that lies in the path of an aircraft on a forty five degree intercept path of the new candidate active waypoint.

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**AMENDMENTS TO THE DRAWINGS**

The attached sheet of drawings includes changes to Fig. 3. This sheet replaces the original sheet of Fig. 3. In Fig. 3, the arrow indicating yes has been corrected to indicate no and the arrow indicating no has been corrected to indicate yes.

Attachment: Replacement Sheet  
Annotated Drawing Showing Changes

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